IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

NETLIST, INC.	)	
	)	
Plaintiff,	)	
	)	
v.	)	
	)	Civil Action No. _____
SAMSUNG ELECTRONICS CO., LTD.,	)	
SAMSUNG ELECTRONICS AMERICA,	)	JURY TRIAL DEMANDED
INC., SAMSUNG SEMICONDUCTOR,	)	
INC.	)	
	)	
Defendants.	)	
	)	
	)	
	)	
	)	
	)	

COMPLAINT

1.   Plaintiff Netlist, Inc. ("Netlist"), by its undersigned counsel, for its Complaint against defendants Samsung Electronics Co., Ltd. ("SEC"), Samsung Electronics America, Inc. ("SEA"), and Samsung Semiconductor, Inc. ("SSI") (collectively, "Samsung" or "Defendants"), states as follows, with knowledge as to its own acts, and on information and belief as to the acts of others:

2.   This action involves Netlist's U.S. Patent No. 7,619,912 ("the '912 patent," the "Patent-in-Suit"). Exhibit 1.

I.   THE PARTIES

3.   Plaintiff Netlist is a corporation organized and existing under the laws of the State of Delaware, having a principal place of business at 111 Academy Drive, Suite 100, Irvine, CA 92617.

4.   On information and belief, SEC is a corporation organized and existing under the laws of the Republic of Korea, with its principal place of business at 129 Samsung-ro, Yeongtong-gu, Suwon, Gyeonggi, 16677, Republic of Korea.   On information and belief, SEC is the worldwide parent corporation for SEA and SSI, and is responsible for the infringing activities identified in this Complaint.   On information and belief, SEC's Device Solutions division is involved in the design, manufacture, use, offering for sale and/or sales of certain semiconductor products, including the Accused Instrumentalities as defined below.   On information and belief, SEC is also involved in the design, manufacture, and provision of products sold by SEA.

5.   On information and belief, SEA is a corporation organized and existing under the laws of the State of New York.   On information and belief, SEA, collectively with SEC, operates the Device Solutions division, which is involved in the design, manufacture, use, offering for sale and/or sales of certain semiconductor products, including the Accused Instrumentalities as defined below.   Defendant SEA maintains facilities at 6625 Excellence Way, Plano, Texas 75023.   SEA may be served with process through its registered agent for service in Texas: CT Corporation System, 1999 Bryan Street, Suite 900, Dallas, Texas 75201-3136.   SEA is a wholly owned subsidiary of SEC.

6.   On information and belief, SSI is a corporation organized and existing under the laws of the State of California.   On information and belief, SSI, collectively with SEC, operates the Device Solutions division, which is involved in the design, manufacture, use, offering for sale and/or sales of certain semiconductor products, including the Accused Instrumentalities as defined below.   On information and belief, Defendant SSI maintains facilities at 6625 Excellence Way, Plano, Texas 75023.   Defendant SSI may be served with process through its registered agent National Registered Agents, Inc., 1999 Bryan St., Ste. 900, Dallas, TX 75201-3136.   On information and belief, SSI is a wholly owned subsidiary of SEA.

7.   On information and belief, Defendants have used, sold, or offered to sell products and services, including the Accused Instrumentalities, in this judicial district.

II.   JURISDICTION AND VENUE

8.   Subject matter jurisdiction is based on 28 U.S.C. § 1338, in that this action arises under federal statute, the patent laws of the United States. 35 U.S.C. §§ 1, *et seq.*

9.   Each Defendant is subject to this Court's personal jurisdiction consistent with the principles of due process and the Texas Long Arm Statute. Tex. Civ. Prac. & Rem. Code §§ 17.041, *et seq*.

10.   Personal jurisdiction exists over the Defendants because each Defendant has sufficient minimum contacts and/or has engaged in continuous and systematic activities in the forum as a result of business conducted within the State of Texas and the Eastern District of Texas. Personal jurisdiction also exists over each Defendant because each, directly or through subsidiaries, makes, uses, sells, offers for sale, imports, advertises, makes available, and/or markets products within the State of Texas and the Eastern District of Texas that infringe one or more claims '912 patents. Further, on information and belief, Defendants have placed or contributed to placing infringing products into the stream of commerce knowing or understanding that such products would be sold and used in the United States, including in this District.

11.   Venue is proper in this Court pursuant to 28 U.S.C. §§ 1391(b) and (c) and/or 1400(b). For example, SEC maintains a regular and established place of business in this judicial district at 6625 Excellence Way, Plano, Texas 75023, and has committed acts of infringement in this judicial district. As another example, SEA maintains a regular and established place of business in this judicial district at 6625 Excellence Way, Plano, Texas 75023, and has committed acts of infringement in this judicial district. Venue is also proper for SSI because it maintains a

regular and established place of business in this judicial district at 6625 Excellence Way, Plano, Texas 75023, and has committed acts of infringement in this judicial district.

12.   Defendants have not contested proper venue in this District. *See, e.g.*, Answer at ¶ 10, *Arbor Global Strategies LLC v. Samsung Elecs. Co., Ltd.*, No. 2:19-cv-333, Dkt. 43 (E.D. Tex. Apr. 27, 2020); Answer at ¶ 29, *Acorn Semi, LLC v. Samsung Elecs. Co., Ltd.*, No. 2:19-cv-347, Dkt. 14 (E.D. Tex. Feb. 12, 2020).

III.   FACTUAL ALLEGATIONS

Background

13.   Since its founding in 2000, Netlist has been a leading innovator in high-performance memory module technologies. Netlist designs and manufactures a wide variety of high-performance products for the cloud computing, virtualization and high-performance computing markets. Netlist's technology enables users to derive useful information from vast amounts of data in a shorter period of time. These capabilities will become increasingly valuable as the volume of data continues to dramatically increase.

14.   The technologies disclosed and claimed in the '912 patents relate generally to memory modules. In many commercial products, a memory module is a printed circuit board that contains, among other components, a plurality of individual memory devices (such as DRAMs). The memory devices are typically arranged in "ranks," which are accessible by a processor or memory controller of the host system. A memory module is typically installed into a memory slot on a computer motherboard and serve as memory for computer systems.

15.   Memory modules are designed for various purposes, including use in server computers supporting cloud-based computing and other data-intensive applications. The structure, function, and operation of memory modules are often defined, specified, and standardized by the JEDEC Solid State Technology Association ("JEDEC"), a standard-setting body for the

microelectronics industry.   Memory modules are typically characterized by the generation of DRAM on the module (*e.g.*, DDR4, DDR3) and the type of module (*e.g.*, RDIMM, LRDIMM).

16.   Dual in-line memory modules ("DIMMs") are a type of memory module which generally includes SDRAMs mounted in a printed circuit board with other components, *e.g.*, serial presence detect ("SPD") and Hub with thermal sensors.

17.   The load-reduced dual in-line memory modules ("LRDIMMs") are a type of memory module that generally include SDRAMs mounted on a printed circuit board.   LRDIMMs typically also include an RCD for transmitting control and address signals to the SDRAMs and data buffers between the host controller and memory devices.

18.   Netlist designs and manufactures a wide variety of high-performance products for the cloud computing, virtualization, and high-performance computing markets.   Netlist's technology enables users to derive useful information from vast amounts of data in a shorter period of time.   These capabilities will become increasingly valuable as the volume of data continues to dramatically increase.

19.   Netlist has a long history of being the first to market with disruptive new products such as the first LRDIMM, HyperCloud®, based on Netlist's distributed buffer architecture. Netlist's—and the industry's—first LRDIMM product demonstrated what was previously thought to be impossible: that a server could be fully loaded with memory and still operate at the highest system speeds available at the time. Netlist's innovative products built on Netlist's early pioneering work in areas such as embedding passives into printed circuit boards to free up board real estate, doubling densities via quad-rank double data rate (DDR) technology, and other off-chip technology advances that result in improved performance and lower costs compared to conventional memory.

The Asserted '912 Patent

20.   The '912 patent is entitled "Memory Module Decoder." Netlist owns the '912 patent by assignment from the listed inventors Jayesh R. Bhakta and Jeffrey C. Solomon. The '912 patent was filed as Application No. 11/862,931 on September 27, 2007, issued as a patent on November 17, 2009, and claims priority to three provisional applications: Nos. 60/588,244 filed on July 15, 2004 60/550,668 filed on March 5, 2004, and 60/575,595 filed on May 28, 2004. The '912 patent also claims priority to application, filed July 1, 2005, now U.S. Patent No. 7,289,386, which is a continuation-in-part of application No. 11/075,395, filed March 7, 2005, now U.S. Patent No. 7,286,436.

21.   Samsung had knowledge of the '912 patent no later than July 6, 2021, when it received a request for indemnification from Google LLC ("Google") in connection with Netlist's assertion of the '912 patent against Google in *Netlist, Inc. v. Google LLC*, No. 3:09-cv-05718 (N.D. Cal.). *Samsung Elec. Co. Ltd. et. al. v. Netlist, Inc.*, No. 21-cv-1453-RGA, Dkt. 14, ¶ 43 (D. Del. Jan. 18, 2022).

22.   The '912 patent relates to memory module technology, and more specifically, to a concept called rank multiplication. A memory module is a device that contains individual memory devices arranged in "ranks" on a printed circuit board. At the time of the invention, most computer systems supported accessing only one or two ranks, limiting the number of ranks that can be added per memory module. Ex. 1, 1:20-2:42.

23.   The '912 patent teaches that one way to upgrade the memory capacity of a memory module is to use on-module logic to present a memory module with, *e.g.*, 2n physical ranks of memory devices, as a module with n (virtual) ranks to the computer system. *Id.*, 6:64-7:19. In this way, "even though the memory module 10 actually has the first number of [physical] ranks of memory devices 30, the memory module 10 simulates a virtual memory module by operating as

having the second number of [logical or virtual] ranks of memory devices 30." *Id.*, 7:9-13. This

technique is commonly referred to as "rank multiplication."

24.   Rank multiplication allows a designer to expand the number of ranks and hence the

total memory capacity on a memory module. It also enables them to construct a memory module

of a given capacity using lower density memory devices that often cost less. *Id.*, 4:42-58, 22:5-

14. For example, for the same 1 GB memory capacity, it could be more cost-effective to use thirty-

six 256-Mb DRAMs arranged in 4 ranks than eighteen 512-Mb DRAMs arranged in two ranks.

Id., 4:42-58, 4:59-5:5.

25.   Figure 1A illustrates an example of a memory module with rank multiplication

capability. The memory module has a register 60 and a logic element 40.
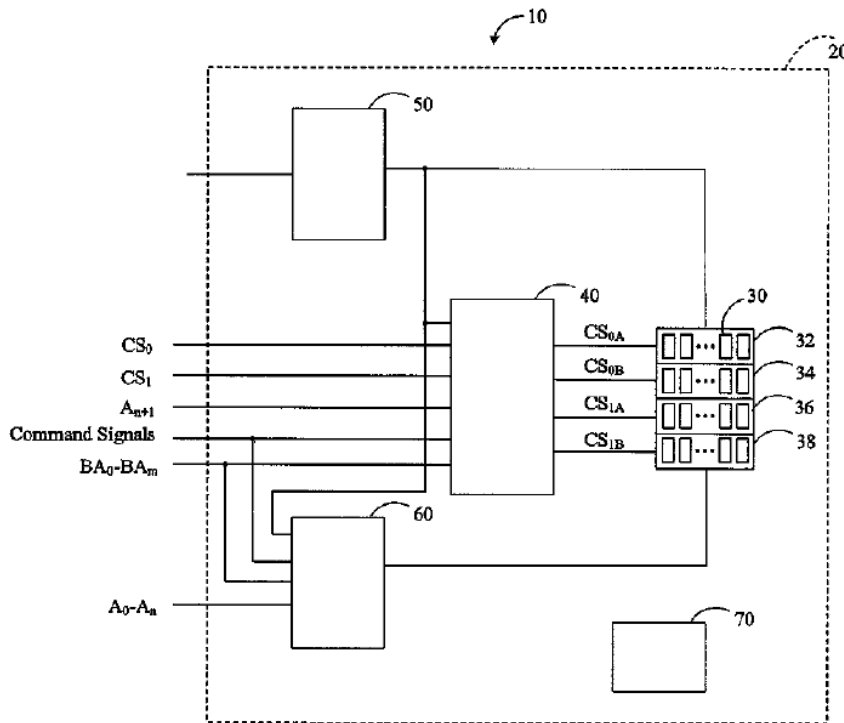
26.   The logic element receives a set of input control signals from the computer system

that include chip-select signals CS_0-CS_1, address signal A_{n+1}, and bank address signals BA_0-BA_m.

Id., 7:35-53; Fig. 1A. From the computer system's perspective, it is connected to only two ranks

of memory devices, to be selected by CS_0 or CS_1, even though the memory devices are arranged

in four physical ranks. *Id.*, 6:55-7:19. In response to the received input control signals, the logic

element on the memory module generates a set of output control signals, corresponding to the four

physical ranks of the memory devices. *Id.*, 6:61-63. The logic element 40 also receives command

signals (such as read/write) from the computer system. *Id.*, 6:55-61, 7:46-53. In response to the

command signal and the input signals, the logic element transmits the command signal to the

memory devices on the selected rank of the memory module. *Id.* In some embodiments, command

signals are transmitted to only a single memory device on a multi-device rank at a time.

27.   In 2009, Netlist served a complaint alleging infringement of the '912 patent on

Google and Inphi in separate proceedings in the Northern District and Central District of

California, respectively. In 2010, Google, Inphi, and a third entity—SM—sought *inter partes*

reexamination of the '912 patent. SM was not accused of infringement by Netlist; but it is a long-

time memory development partner with Samsung. The PTO ordered reexamination and merged

the three proceedings. The consolidated proceeding examined every single claim of the '912

patent, including claim 16. Over the course of the reexamination, the Patent Trial and Appeal

Board twice affirmed the validity of claim 16, and the Federal Circuit summarily affirmed the

Board.

Samsung's Infringing Activities

28.   On information and belief, Samsung has stated that it is responsible for making,

using, selling, offering to sell, and/or importing, without authority, infringing DDR4 LRDIMMs

and DDR4 RDIMMs and other products that have materially the same structures and designs in

relevant parts to at least Google (the "Accused Instrumentalities"). Google has asserted the same,

stating that "the products it [Netlist] has actually accused are supplied by [redacted] Samsung[.]"

Google has also asserted that the sales that Samsung makes to Google relating to such Accused

Instrumentalities are in the United States: "Samsung's sale of the same products to Google – a U.S. company . . . ."

IV.   FIRST CLAIM FOR RELIEF – '912 PATENT

29.   Netlist re-alleges and incorporates by reference the allegations of the preceding paragraphs of this Complaint as if fully set forth herein.

30.   On information and belief, Samsung directly infringed and is currently infringing at least one claim of the '912 patent by, among other things, making, using, selling, offering to sell, and/or importing within this District and elsewhere in the United States, without authority, the accused DDR4 LRDIMMs and DDR4 RDIMMs and other products with materially the same structures in relevant parts. For example, and as shown in Exhibit 2, the accused DDR4 LRDIMMs and DDR4 RDIMMs and other products with materially the same structures in relevant parts infringe at least claim 16 of the '912 patent. An exemplary claim chart comparing claim 16 of the '912 patent to exemplary Accused DDR4 LRDIMMs and RDIMMs products is attached as Exhibit 2.

V.   DEMAND FOR JURY TRIAL

31.   Pursuant to Federal Rule of Civil Procedure 38(b), Netlist hereby demands a trial by jury on all issues triable to a jury.

VI.   PRAYER FOR RELIEF

WHEREFORE, Netlist respectfully requests that this Court enter judgment in its favor ordering, finding, declaring, and/or awarding Netlist relief as follows:

A.   that Samsung infringes the Patent-in-Suit;

B.   all equitable relief the Court deems just and proper as a result of Samsung's infringement;

C.   an award of damages resulting from Samsung's acts of infringement in accordance with 35 U.S.C. § 284;

D.   that Samsung's infringement of the Patent-in-Suit is willful;

E.   enhanced damages pursuant to 35 U.S.C. § 284;

F.   that this is an exceptional case and awarding Netlist its reasonable attorneys' fees pursuant to 35 U.S.C. § 285;

G.   an accounting for acts of infringement and supplemental damages, without limitation, prejudgment and post-judgment interest; and

H.   such other equitable relief which may be requested and to which Netlist is entitled.

Dated: August 1, 2022

Respectfully submitted,

/s/ Jason Sheasby
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